## MODES/DRAFTING AIDS

## SNAPPING AND TRACKING COMMANDS



A    B    C    D
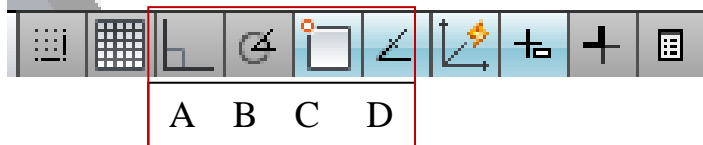
### A. ORTHO MODE

When ortho mode is turned on, objects can only be drawn in either the horizontal or vertical direction. This command can be toggled on/off with the F8 button or by activating button 'A' above.

### B. POLAR TRACKING

When polar mode is turned on, the drafting of objects in the drawing can be controlled using tracking lines that appear at given angular intervals. An example of using polar tracking to draft a polyline with a 45 degree angle is shown to the right. In this example, the beginning point of the polyline was specified by left clicking on the beginning point of the polyline. Next, hover the mouse near the area where the polyline would form a 45 degree angle, and a dashed tracking line should appear as shown below. Slide the mouse pointer along the tracking line and left click again to set the ending point of the polyline.



Polar: 1070.5856 < 45.0000°
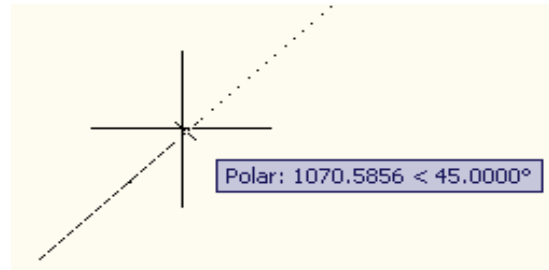
The angular increment of the polar tracking line can be specified by right clicking on the polar tracking icon and selecting an angle from the list that appears. You can also control the polar tracking settings by right clicking on the polar tracking icon and selecting *Settings…* from the menu. This will bring up the *Drafting Settings* window, shown below.





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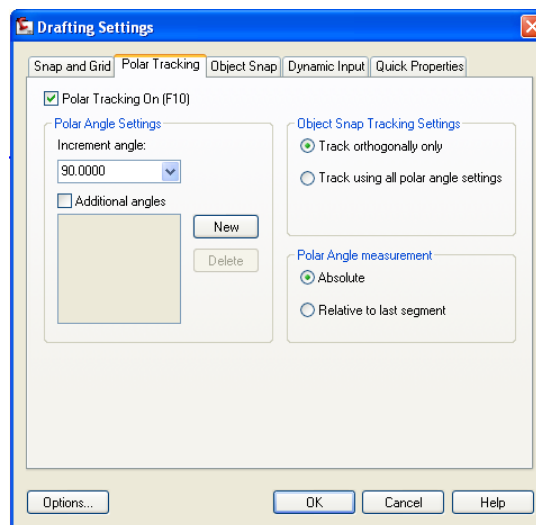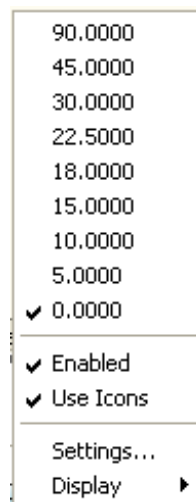
## MODES/DRAFTING AIDS

Another example of a tracking line is an extension line that appears when you click on the ending point of an existing object in the drawing. An example of the extension tracking line is shown below.



Extension: 625.5397 < 105.9063°
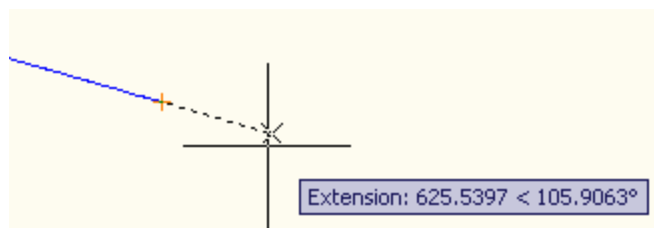
### C. OBJECT SNAP

Object snap, or Osnap, allows you to snap a drafting object exactly to a specific location on an existing object in the drawing. For example, you can draw a line that is snapped to the midpoint or endpoint of a line that has previously been drawn in the drawing. When object snapping is turned on, a small square will appear on a drawing object that represents a point where a new object can be snapped to. The example to the left is an example of an indicator that appears allowing you to snap to the endpoint of an existing line.
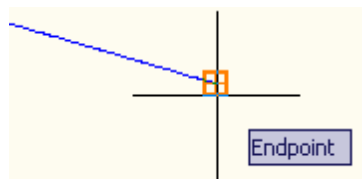
There are a number of locations on an object that you can choose to snap to. If you right click on the object snap icon, the menu shown below and to the left will appear. You can use this menu to toggle individual snap location options on or off. A snap location that is activated will have a box around the icon to the left of the name. Right clicking on the object snap icon and choosing *Settings…* from the menu will open the *Drafting Settings* window, shown below and to the right. This window can also be used to select or unselect object snap modes.
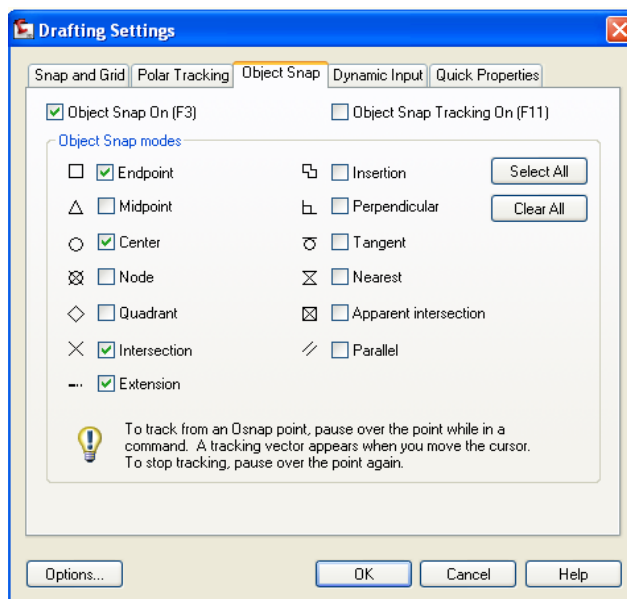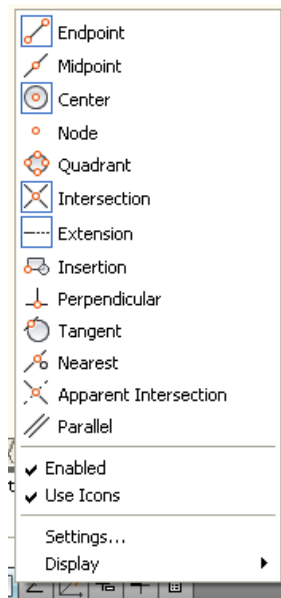




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## MODES/DRAFTING AIDS

You can also manually select the snap mode when drafting a new drawing object. For example, assume you want to draw a new polyline that is snapped to the endpoint of an existing polyline. Start the polyline command, but before you click on a starting point for the new polyline, hold down the Shift key and right click with the mouse. The shortcut menu shown to the right will appear. You can specify a snap point from this shortcut menu that will be used to place the starting point of the new polyline. This procedure does not require you to have the snap mode turned on. This procedure is especially useful when you are working in a congested area of the drawing to prevent you from accidentally snapping to a location other than where you want it to snap.

The F3 button also toggles Osnaps on and off.
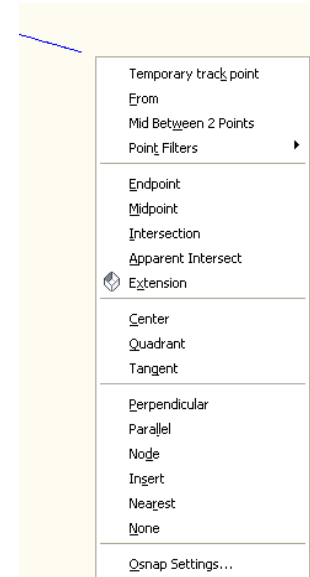
D. **OBJECT SNAP TRACKING**

Object snap tracking is a method that can be used to combine the snap feature with the benefits of the tracking lines. The way object snap tracking works is illustrated in the example below, which shows how it can be used to draw a polyline with a starting point that is located at the point where the extension lines of two existing objects would intersect.

1. Make sure *Object Snap* and *Object Snap Tracking* are toggled on.

2. Start the command to draw a new polyline.

3. Hover the mouse pointer over the end of one of the existing polylines until the endpoint snap symbol appears. Do not left click to select the endpoint.
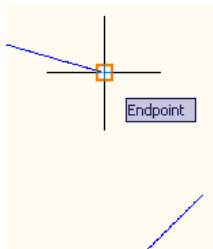
4. Slowly move the mouse pointer away from the end of the first polyline and hover it over the end of the second polyline until the endpoint snap symbol appears on that object. Do not left click on the endpoint of this object either. A small cross should still be shown on the endpoint of the first polyline.
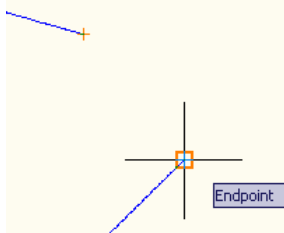
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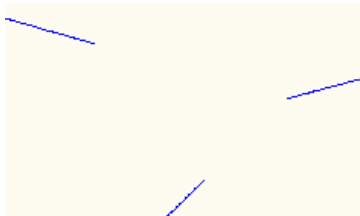
## MODES/DRAFTING AIDS

5.  Slowly move the mouse pointer away from the end of the second polyline until the dashed extension line appears, as shown below.
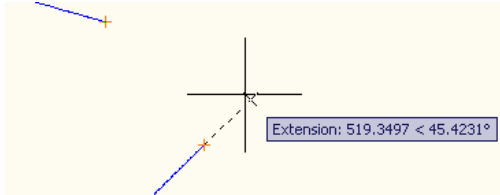


6.  Continue to move the mouse pointer along the dashed extension line until a second extension line appears linking to the first polyline object.
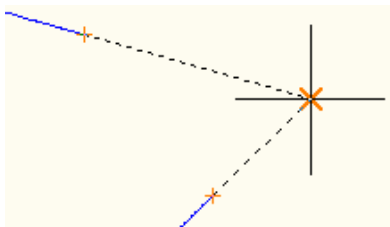


7.  When the cross appears indicating the location where the extension lines from the two existing polylines intersect, Left click to select the beginning point of the new polyline.



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## MODES/DRAFTING AIDS

**DYNAMIC INPUT**

Dynamic input is toggled on using the icon on the Application Status Bar at the bottom of the window. When dynamic input is activated, input windows will appear in the drawing area when you draft objects which allow you to dynamically input variables to define that object such as length, rotation angle, curve radii, etc.

The tab button allows you to toggle between the input windows.

The figure below and to the left shows a 2D polyline being drawn without the dynamic input feature turned on. The figure below and to the right shows the same command with the dynamic input feature on. This command can also be toggled on by using the F12 button.
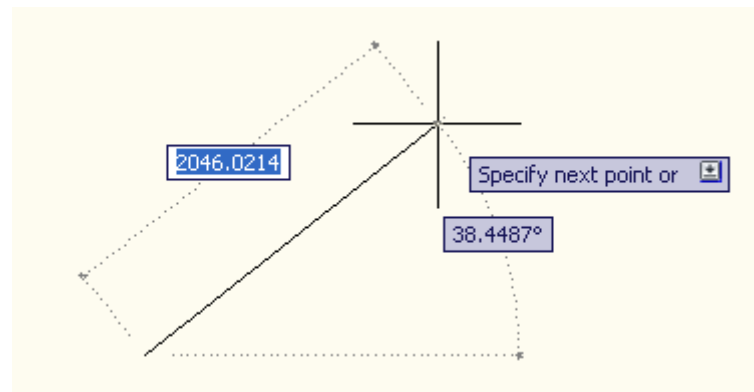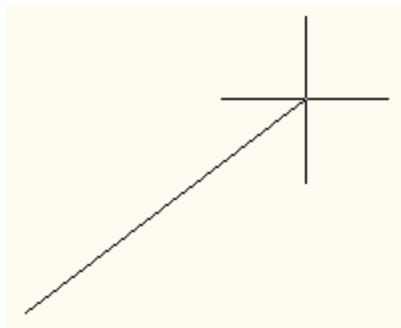
**SELECTING DRAWING OBJECTS**

In most commands, drawing objects can be selected individually by left clicking on them with the mouse. If you want to remove a specific object from a selection set, hold down the Shift key and select it again.

Multiple objects can also be selected using a crossing window. If you click on the left hand corner of the object first and window around the objects moving from left to right, only the drawing objects contained completely within the window will be selected. If you click on the right hand corner of the window first and window around the objects moving from right to left, all of the drawing objects contained within the window or that the window touches will be selected.

**USING THE COMMAND LINE TO SPECIFY DRAWING OBJECT DIMENSIONS**

You can specify the dimensions of a line or edge of a polygon by entering the values at the command line. To do this, start by clicking on the beginning point in the drawing, and then typing in a command following the format below:

@{distance in the x-direction} , {distance in the y-direction}

For example, to specify an ending point for the objects that is at a point 10 units to the right and 20 units above the starting point, enter the command @*10,20* at the command line. Coordinates to the left or below the starting point, negative x-direction or negative-y direction respectively, will require a negative value.

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